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(54) Structural beams

(57) A lintel, and a method of manufacturing a lintel, having a continuous periphery except for a single longitudinal join (15).

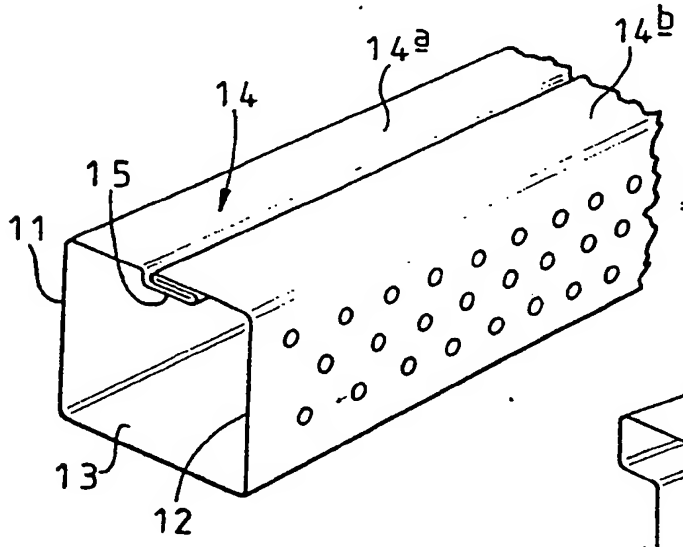

FIG 1

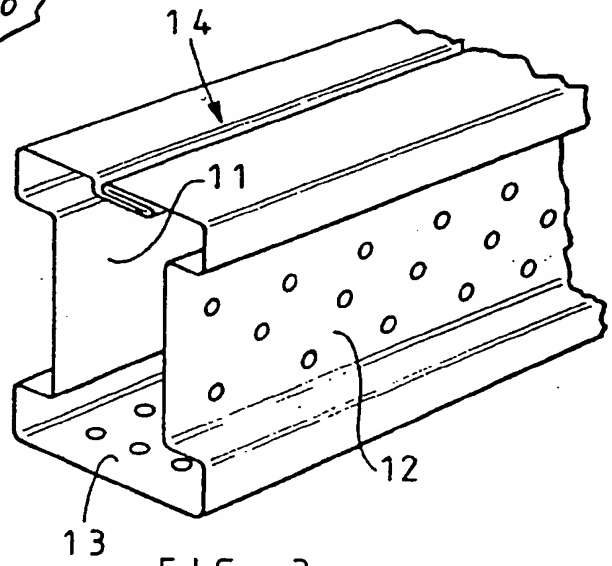

FIG 3

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

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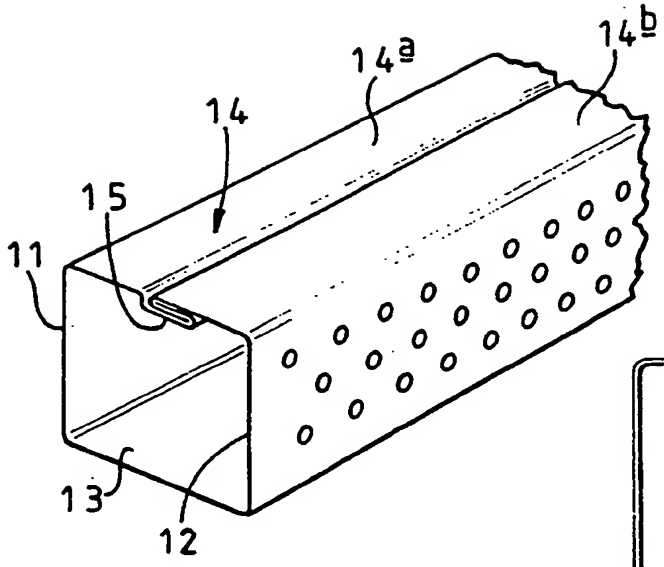

FIG 1

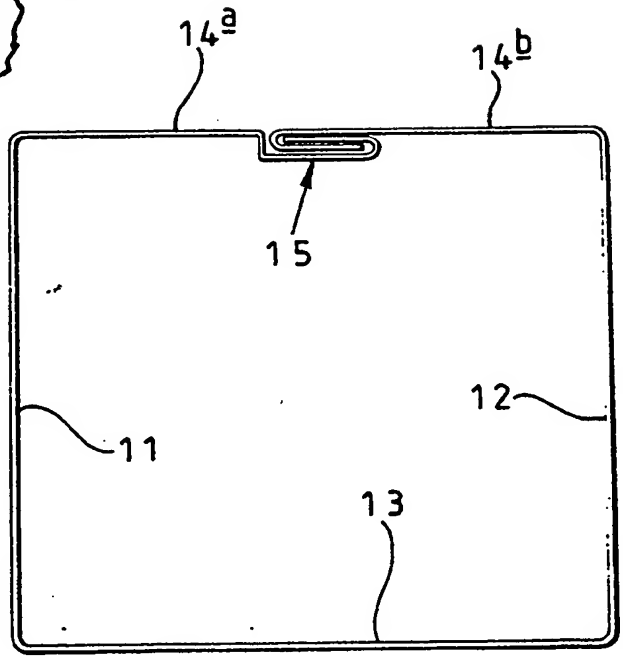

FIG 2

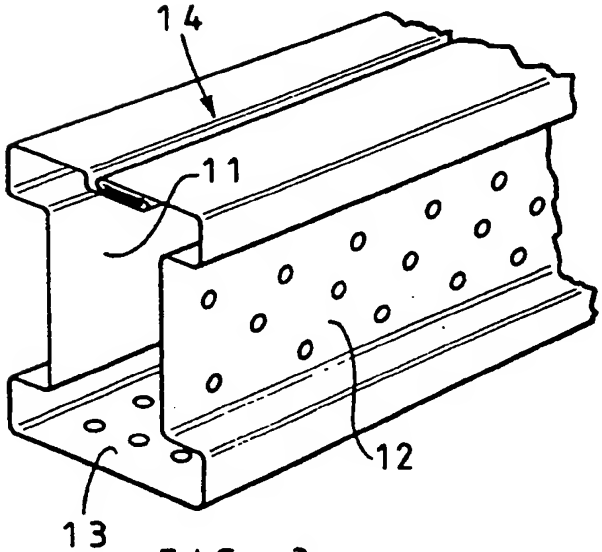

FIG 3

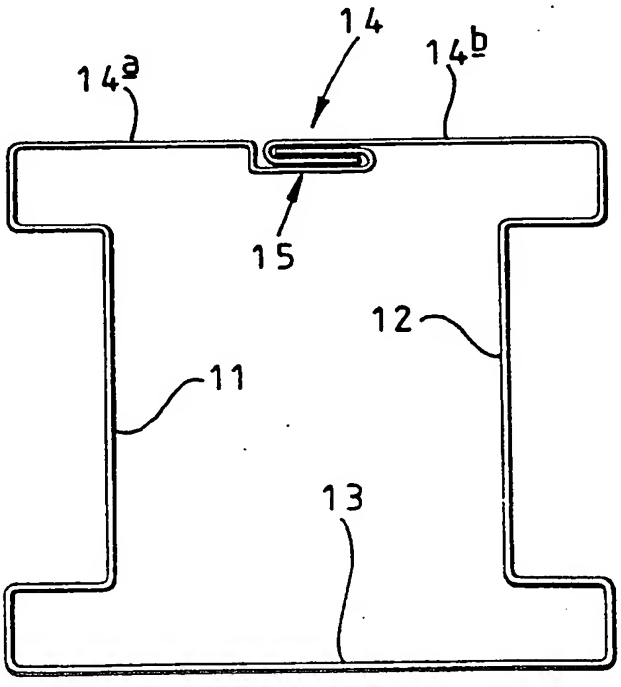

FIG 4

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STRUCTURAL BEAM

This invention relates to a structural beam of the kind intended to span an opening such as a door or window opening in a wall, such beams usually being referred to as lintels.

There are many different lintel designs in existence, and one particular class of lintels, often used in a non-cavity wall, or in conjunction with a single leaf of a cavity wall, is known as a box lintel and comprises an elongate, hollow, sheet metal fabrication having substantially parallel upper and lower surfaces. The fabrication has a generally rectangular cross-section, hence the name "box lintel", although it is to be recognised that a truly rectangular cross-section is not a critical feature.

When fabricating such lintels from sheet metal it is usual to form the lintel in at least two, and often more elongate component which are then secured together by welding, or in any other conventional manner, to define the elongate lintel. The separate formation of a plurality of elongate components, and the subsequent interconnection of the components is a time consuming and therefore relatively expensive exercise and it is an object of the present invention to provide a lintel, and a method of manufacturing a lintel, wherein this disadvantage is minimised.

In accordance with the present invention there is provided a lintel comprising a hollow elongate sheet metal member having first and second opposite, generally parallel and flat, longitudinally extending surfaces, the periphery of the lintel being continuous except for a single longitudinally extending join.

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Preferable the lintel is of rectangular cross-section.

Alternatively the lintel is of I-shaped cross-section.

In accordance with the further aspect of the present invention there is provided a method of manufacturing a lintel comprising bending an elongate strip of sheet metal along a plurality of parallel, longitudinally extending lines to produce a hollow cross-section, the bends bringing the longitudinally extending opposite marginal edges of the strip to positions adjacent one another, and, joining the adjacent longitudinally extending marginal edges of the strip.

Preferably the strip is bent by a roll forming operation.

Preferably the adjacent marginal edges of the strip, after bending, are joined by a lock seaming process.

Alternatively the adjacent, longitudinally extending marginal edges of the strip after bending are joined by electro-resistance welding.

Two examples of the present invention are illustrated in the accompanying drawings wherein

Figure 1 is a diagrammatic perspective view of a box lintel of square cross-section,

Figure 2 is an end view of the lintel of Figure 1 to an enlarged scale, and

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Figures 3 and 4 are views similar to Figures 1 and 2 respectively of a box lintel of rectangular, I-shaped cross-section.

Referring first to Figures 1 and 2 of the accompanying drawings the lintel is formed from an elongate strip of mild steel, the strip being rectangular in plan view. The length of the strip is equal to the desired length of the lintel, and the width of the strip is equal to the circumference of the lintel plus an amount necessary for "lock-seam" joining as will be described in more detail hereinafter. The strip is preferably galvanised mild steel, or alternatively is provided with some other corrosion resistant coating before formation of the lintel. It is to be understood however that if desired a corrosion resistant coating could be provided on the lintel after its formation in which case the starting material could be bare mild steel strip.

The strip is bent, preferably utilising cold roll forming apparatus, principally about four spaced bend lines parallel to the longitudinal marginal edges of the strip. The four bend lines define the four corners respectively of the square cross-section of the lintel, and thus the lintel has three continuous walls 11, 12, 13 and a fourth wall 14 consisting of the opposite longitudinal marginal edge regions 14a, 14b of the strip which are interconnected by a "lock-seam" 15.

A "lock-seam" is a known method of joining adjacent sheet metal edges and as is clear from Figure 2 the coplanar edge regions 14a, 14b are shaped to provide longitudinally extending regions of U-shaped cross-section, each U-shape having one limb engaged between the parallel limbs of the other U-shape, and the two regions then being rolled flat so that each U-shape grips the

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intervening limb of the other U-shape. As is evident from Figure 2, in order to accommodate the U-shape regions without creating a protrusion on the exterior surface of the lintel, the region 14a is stepped downwardly adjacent its free edge so that the interlocked U-shapes can be accommodated within the lintel.

Desirably the "lock-seam" extends along the longitudinal centre line of the wall or surface 14 of the lintel.

In the second example illustrated in Figures 3 and 4 the only significant difference from the example illustrated in Figures 1 and 2 is the cross-sectional shape of the lintel which, although generally rectangular, has its side walls 11 and 12 stepped inwardly so that the lintel is I-shaped in transverse cross-section. The marginal edge regions 14a, 14b of the strip, which define the wall or surface 14 of the lintel are interconnected by a "lock-seam" 15 exactly as described with reference to Figures 1 and 2.

It will be recognised that both the lintel of Figures 1 and 2, and the lintel of Figures 3 and 4 have generally planar, parallel upper and lower surfaces 14, 13 and in use the lintel will be orientated with the surface 14 presented upwardly and receiving the courses of brickwork, or other wall construction to be supported. The lower surface 13 will span the opening, with the longitudinal end regions of the surface 13 seated on the wall construction at either side of the aperture which is spanned by the lintel.

The bends of the "lock-seam" 15 are produced during the roll forming of the lintel from the base strip, but conveniently the final rolling of the "lock-seam" to clench the two U-shapes in engagement with one

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another is performed separately from the roll forming of the lintel.

As is evident from Figures 1 and 3 some, or all, of the walls of the lintel can be perforated to provide a key for the plaster coating applied to the wall incorporating the lintel. Usually the innermost, and lowermost walls will be provided with the plaster key, but if desired the upper, and outer walls could be similarly treated. The plaster key could be provided by a plurality of regularly spaced circular apertures, or by providing the material with a plurality of spaced slits the material to one, or both sides of the slits being displaced out of the plane of the remainder of the material. Other alternative approaches include roughening the surface of the or each wall of the lintel, and affixing metallic mesh to the or each wall.

When calculating the width of the strip needed for the lintel the overall width will be the circumferential dimension of the lintel plus the amounts needed to define the various portions of the "lock-seam" 15.

As an alternative to the use of a "lock-seam" 15 the opposite, longitudinally extending, marginal edges of the strip which have been brought adjacent one another by the bending of the strip to form the lintel, can be joined by a butt weld preferably using an electro-resistance welding (ERW) technique.

It is to be recognised that while a generally rectangular cross-section is preferred in the box lintels described above, other hollow lintel configuration suitable for roll-forming can be produced in the same manner using either "lock-seaming" or ERW techniques.

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CLAIMS

1 A lintel comprising a hollow elongate sheet metal member having first and second opposite, generally parallel and flat, longitudinally extending surfaces, the periphery of the lintel being continuous except for a single longitudinally extending join.

2 A lintel as claimed in Claim 1 of rectangular cross-section.

3 A lintel as claimed in Claim 1 of I-shaped cross-section.

4 A method of manufacturing a lintel comprising bending an elongate strip of sheet metal along a plurality of parallel, longitudinally extending lines to produce a hollow cross-section, the bends bringing the longitudinally extending opposite marginal edges of the strip to positions adjacent one another, and, joining the adjacent longitudinally extending marginal edges of the strip.

5 A method as claimed in Claim 4 wherein the strip is bent by a roll forming operation.

6 A method as claimed in Claim 4 or Claim 5 wherein the adjacent marginal edges of the strip, after bending, are joined by a lock seaming process.

7 A method as claimed in Claim 4 or Claim 5 wherein the adjacent, longitudinally extending marginal edges of the strip after bending are joined by electro-resistance welding.

8 A method of manufacturing a lintel substantially as hereinbefore described.

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9 A lintel manufactured by the method claimed in any one of claims 4 to 8.

10 A lintel substantially as hereinbefore described with reference to Figures 1 and 2 of the accompanying drawings.

11 A lintel substantially as hereinbefore described with reference to Figures 3 and 4 of the accompanying drawings.

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